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REVIEW OF:—JACZEWSKI, A. A., YEARBOOK OF INFORMATION CONCERNING DISEASES AND INJURIES OF CULTIVATED AND WILD ECONOMIC PLANTS. FIRST YEAR. 1903. pp. 166. ST. PETERSBURG, 1804. RUSSIAN.

ERNST A. BESSEY.

In this first number insect injuries are omitted; they are to be included in succeeding years. The diseases treated are described in such a way that a man of average intelligence will be able to identify most of them without the aid of even a hand lens. In the case of the more important diseases directions for combating them are given. The subject is arranged in nine chapters, according to the host plants, as follows: I, Cereals; II, Grasses and forage crops; III, Vegetables and garden plants; IV, Fruit trees; V, Berries; VI, Grapes; VII, Forest trees; VIII, Garden and ornamental plants; and IX, Tropical and subtropical plants. Four indexes close the work, viz, host and parasite indexes in both Russian and Latin.

I. CEREALS.

Wheat. — *Tilletia tritici* Wint., attacking especially winter wheat, and *Ustilago tritici* Jensen, principally on spring wheat were abundant over all Russia, especially, however, in the South-Central governments. Ergot, *Claviceps purpurea* Tul., was abundant in Kursk government. Of the three rusts, *Puccinia graminis* Pers., *P. glumarum* Eriks. & Henn., and *P. dispersa* Erik. & Henn. the second was rare, the third abundant, especially in the central governments, while the first was very abundant in these governments and especially in Caucasus where in some regions the crop was totally destroyed. Low-lying, shallow clay soils were most subject to the disease.

Rye. Ergot, *Claviceps purpurea* Tul., was a very serious pest, being very abundant in Western Siberia and in Central and Western Russia. In one district in Poland 33% of the grains were affected. Stem rust, *Puccinia graminis* Pers., was less abundant than usual, except in Kovno government where it was unusually severe. Brown rust, *P. dispersa* Eriks. & Henn. occurred more or less abundantly in Central and Western Russia.

Oats. *Ustilago avenae* Rostr., was not abundant in Northern Russia, but in the South was destructive, as well as in the East. In Simbirsk government the variety Datsky was especially severely attacked. *Puccinia graminis* Pers. and *P. conorifera* Klebh. although occurring, were nowhere very destructive.

Barley. *Ustilago hordei* Bref. was scarce in 1903 although in 1901 it was abundant in many districts. *Puccinia graminis*

Pers. and *P. simplex* Eriks. & Henn. occurred in North-western and Central Russia, but not destructively. Ergot, *Claviceps purpurea* Tul. was abundant in Kursk government.

Corn. In Simbirsk, Kursk, Kherson and Poltava governments and near Batum in the Caucasus smut, *Ustilago maydis* DC. was abundant upon corn.

Proso (*Panicum miliaceum* L.) was injured by smut, *Ustilago panici miliacei* Wint. in Kherson and Kursk governments.

II. GRASSES AND FORAGE CROPS.

Clover. *Uromyces trifolii* Lev. was abundant in all but the southwestern part of Russia. *Erysiphe martii* Lev., and *Peronospora trifoliorum* DeBary although often very destructive were not injurious in 1903. *Phyllachora trifolii* Fuckel was very injurious in Pskoff, Smolensk and Kursk governments, affecting *T. repens* more seriously than the other clovers.

Timothy grass. Ergot, *Claviceps microcephala* Wallr. and *Scolecotrichum graminis* Fuck. occurred both in Kursk government and the former also in Pskoff government.

Triticum repens L. and *T. cristatum* were affected seriously by *Epichloe typhina* Tul. in Kreson government. The same disease affected timothy grass in Central Russia.

Awnless Brome Grass. From Kursk government was reported a disease which proved to be due to bacteria compared by the author to the bacterial disease of sorghum in America.

Alfalfa. In Stavropol government in southeastern Russia alfalfa suffered somewhat with *Pseudopeziza trifolii* Fuck., while *Septoria medicaginis* Rob. & Desm. was reported from near Smolensk in West-Central Russia.

Festuca elatior as well as wheat and other grasses was affected by *Septoria tritici* Desm. in Stavropol government.

III. VEGETABLES AND GARDEN PLANTS.

Tricholoma sordidum Fr. growing in the soil caused the death of vegetables planted therein in Moscow government.

Potato. *Phytophthora infestans* DeB. was very injurious in Central and Northern Russia in 1902; in 1903, however, it was rare in those regions, and not generally destructive anywhere in Russia proper. In Keletz government in the low lands the loss reached 20 to 80 per cent, the early sorts being most susceptible. The varieties Gratia and Blanc-Riesen proved most resistent. In points in Transcaucasus the disease was very destructive.

Cercospora concors Sacc. known before only near Berlin, was discovered in Russia in 1900 and in 1903 was found in three rather widely separated governments of Central and Northwestern Russia.

Tomato. Septoria lycopersici Speg., discovered at one spot in Transcaucasus in 1901, was found in 1903 as far North as Rostoff on Don and in many places in Caucasus. *Phytophthora infestans* DB. was found on tomatoes near Kursk. Fruit spots caused by *Cladosporium, Macrosporium* and *Fusarium* were found near Kursk and, except the third, in Transcaucasus.

Egg-Plant. Phyllosticta hortorum Speg. was found on the leaves only, of egg-plants in Transcaucasus.

Cabbage. Olpidium brassicae Dang., attacking the hypocotyl of seedling cabbage was reported from Lifland and Caucasus. *Plasmodiophora brassicae* Wor. occurred throughout Northern Russia. *Sclerotinia libertiana* Fuck., causing rot of cabbage was reported from Smolensk government while *Peronospora parasitica* Tul. occurred to a limited extent in Kursk government.

Asparagus. The rust, *Puccinia asparagi* DC., occurs in Russia as yet only sporadically but has been increasing from year to year. *Leptosphaeria circinans* Sacc. was injurious in Transcaucasus.

Pea. Erysiphe polygoni DC. was very prevalent in many parts of Russia. *Uromyces pisi* DB. was of more than usual severity in Smolensk, Lifland, Moscow and parts of Simbirsk governments. In much the same region *Peronospora viciae* DB. was also rather injurious. The pea anthracnose, *Ascochyta pisi* Lib., attacked chiefly the garden sorts, only rarely the field peas in the same general district.

Bean. Uromyces appendiculatus Lev. occurred in Central and Northwestern Russia, *Isariopsis griseola* Sacc. in the same region and in Caucasus, and anthracnose, *Gloeosporium lindemuthianum* B. & C. in Caucasus. Of special interest is the occurrence in Transcaucasus of *Bacillus phaseoli* E . F. Smith.

Cucumber. Scolecotrichum melophthorum Prill. & Delacr. is sporadically found over a wide region of Russia but is easily controlled by Bordeaux mixture. *Gloeosporium legenarium* Sacc., found for the first time in Russia in 1901 was still confined in 1903 to the government of its discovery and one other, in North Central Russia. *Peronospora* (*Plasmopara*) *cubensis* B. & C. was observed in Russia for the first time in 1902, in Tver government. In 1903 it was exceedingly destructive in Kursk government; while apparently the same disease destroyed the whole crop in Ussuri district in extreme Eastern Siberia.

Pumpkin. Sphaerotheca humuli Burr. was widespread in Southern Russia. The perithecia are extremely rare, so that not until 1903 was Jaczewski able to find any and so determine the species.

Watermelon. For the first time outside of North America the fungus *Cercospora citrullina* Cooke was found in Caucasus in 1903.

Flax. Wilt, *Fusarium lini* Bolley, was found by Jaczewski and Bolley in all the flax-growing regions of Russia. *Melampsora lini* Tul., a very destructive rust, occurred in Lifland, Pskoff and Smolensk governments.

Tobacco. Mosaic disease, ascribed to Bacteria, occurred in Little Russia and Caucasus. Two spot diseases of the leaves were observed; *Phyllosticta tabaci* Pass. in Voronezh government and in Transcaucasus and *Ascochyta nicotianae* Pat. in Transcaucasus. In Crimea the seed-beds were ravaged by *Pythium debaryanum* Hesse. Burial of the diseased plants caused them to send out new roots above the point of injury and saved them.

Sunflower. The rust, *Puccinia tanaceti* DC., from the sixties on has proved so destructive that culture of the sunflower had to be given up in some regions in Southern Russia. It is very abundant throughout all Southern Russia and even in Transcaucasus. Experiments demonstrated that soaking the seeds 2 to 3 hours in formalin (300 of water to 1 of the commercial strength) before sowing almost totally prevented the rust while untreated seeds from the same lot gave very badly rusted plants.

Sclerotinia libertiana Fuck. was only locally injurious in Smolensk, Pskoff and Kursk governments, although in the wet season of 1902 it was very destructive.

Mulberry. *Sphaerella mori* Fuckel on the leaves, *Polyporus hispidus* Fr., on the trunks and *Dematophora necatrix* R. Hartig on the roots occur widespread in Transcaucasus.

Onion. *Peronospora schleidenii* Unger was injurious to the onion in Pskoff and Kursk governments.

Spinach was attacked and almost completely destroyed by *Peronospora effusa* Rabh. at Tsarskoe Selo. In Smolensk government *Septoria spinaciae* West. was harmful.

Beet. Various fungi producing leaf spots were abundant in Western and Central Russia, viz: *Cercospora beticola* Sacc., *Phyllosticta betae* Oudem., and *Septoria betae* West.

Poppy. Near Riga, in Transcaucasus, and in Kursk government *Peronospora arborescens* L. was abundant.

Carrot. In Keletz government carrots suffered from the attacks of *Sclerotinia libertiana* Fuck.

IV. FRUIT TREES.

Apple. Rust, *Gymnosporangium tremelloides* R. Hart., was abundant in Northwestern, Central and South Central Russia and in all Caucasus. It was not so severe as in 1901 when it literally defoliated the trees in Smolensk government. The teleutospore host is *Juniperus communis* L. Scab, *Fusicladium dendriticum* Fuck. occurred wherever apples are grown in Russia. *Monilia fructigena* Pers. was abundant in Northwestern, Central, Western, Southwestern and Southern Russia and in Caucasus.

Leptothyrium pomi Sacc. and *Spilocaea pomi* Fr. were met with only in Southern Russia, and that not abundantly. *Phyllosticta briardi* Sacc. was abundant in Central and Northern Russia, in Crimea and in Caucasus along the Black Sea. *Sphaerotheca mali* Burr., on the contrary, was confined to one locality in the last mentioned region. *Sphaeropsis malorum* Peck, the cause of black rot of the fruit and canker of the limbs was reported in 1903 from that same region in Caucasus, from Kharkor government in Russia and from Samarkand Province in Turkestan. Crown-gall, ascribed by the author to *Dendrophagus globosus* Toumey, was reported only from St. Petersburg government although occurring in many parts of Russia the preceding year. *Hydnum schiedermayeri* Heufler has proved destructive in only one locality at Simbirsk.

Pear. Rust, *Gymnosporangium sabinae* W., is confined to those regions where the teleutospore host, *Juniperus sabina* L. grows, *i. e.,* to Southern Russia where it is very abundant. In Poltava government not only the leaves but also the twigs were attacked. *Septoria piricola* Desm. is widespread in Russia, being injurious especially to nursery trees. In 1903 it was most abundant in those governments along the Black Sea. Scab, *Fusicladium pirinum* Fuck., ordinarily widespread in Russia, was found in abundance in 1903 only in points in Caucasus and in Crimea and vicinity. In much the same region, but spreading further North *Monilia fructigena* Pers. was destructive. In Poltava government *Stigmatea mespili* Sor. was injurious to the foliage of both cultivated and wild pear trees.

Quince. *Monilia fructigena* Pers., *Sclerotinia cydoniae* Schell., and *Podosphaera oxyacanthae* DB. occurred in 1903 only in limited areas, respectively Transcaucasus, the vicinity of Kiev, where the trouble was very destructive, and on the southern coast of Crimea.

Plum. Leaf spot due principally to *Phyllosticta prunicola* Sacc., but also to *Cercospora circumcissa* and *Sphaerella bellona,* occurred in Northwestern and Central Russia and along the Black Sea in Caucasus. In Kursk government all the trees were completely defoliated in August, and even the fruits were attacked. *Polystigma rubrum* Tul. caused considerable injury to foliage in the Southern governments as well as in Simbirsk government. Rust, *Puccinia pruni-spinosae* Pers., was seriously injurious only in Smolensk and Kursk governments, while *Monilia cinerea* Bon. was of importance in Smolensk and and Voroneh governments only. Plum pockets, *Exoascus pruni* Fuck., caused considerable loss in Lifland, Mogileff and Kursk governments, the loss in the last two being one-third and over one-third, respectively, of the fruits. The disease first appeared destructively in Kursk government in 1900 and each succeeding year has increased in severity.

Cherries. Witches brooms, *Exoascus cerasi* Sadeb., were reported from St. Petersburg, Plock and Tambov governments, which are widely separated from one another. *Gnomonia erythrostroma* Fuck. causing a leaf spot occurred in Kharkov government and in Caucasus while a leaf and fruit spot due to *Clasterosporium amygdalearum* Sacc. occurred in Caucasus, in Crimea, and in Kursk government. A third leaf spot, *Cercosporella cerasella* Sacc. occurred in the two last named localities only. *Monilia cinerea* Bon. caused serious injury to cherries in parts of Kursk government, in many places in Transcaucasus, and at Balaclava in Crimea.

Peach. Leaf curl, *Exoascus deformans* Fuck., was found in 1903 in Kherson government and Crimea, both on the Black Sea, especially on Arabian varieties, in Transcaucasus and in Transcaspian Province, Turkestan, where it practically defoliated the trees in May. Other leaf troubles were *Clasterosporium amygdalearum* Sacc., in much the same localities as the preceding, except Turkestan, and *Puccinia pruni-spinosae* Fuck. observed near Batum in Caucasus. Considerable injury was occasioned to the fruits in many localities in Transcaucasus by *Gloeosporium laeticolor* Berk. Peach yellows was reported from Sotchi in Caucasus.

Apricot. Phoma armeniaca Thüm. was so destructive to the fruits of the apricot in Transcaucasus that they were very rare in the markets.

Almond. Clasterosporium amygdalearum Sacc., leaf spot, and *Gloeosporium amygdalinum* Brizi, anthracnoses of fruit, twigs and leaves, were respectively in Transcaucasus and near Crimea.

V. BERRIES.

Gooseberry. Mildew, *Sphaerotheca mors-uvae* B. & C., was first observed in Russia in 1901; by 1902 it had spread to six governments, and in 1903 it was reported from nearly all parts of Russia and from Tomsk in Siberia; Transcaucasus remained as yet unaffected. In contrast with this very destructive parasite is *Microsphaera grossulariae* Lev., which is well known in Europe, but causes little damage. It occurred near Riga and in Smolensk and Kursk governments. *Septoria grossulariae* West. was quite abundant in Western and Central Russia. Rust, *Puccinia pringsheimiana* Kleb., occurred abundantly in Novgorod and Vladimir governments, and also in Smolensk government where it attacked and destroyed more than half the fruits. Although abundant the three previous years on the leaves, the fruits were not attacked until 1903.

Black currant. Cronartium ribicola Dietr. was met with in 1903 in several widely separated places, *e. g.*, Lifland in Northeastern Russia, Lodz in Poland, Kursk government in South Central Russia, and Tomsk in Siberia. At Tomsk *Sphaerotheca mors-uvae* B. & C. was also found as well as in one other locality. "*Puccinia Ribis nigri acutae* Klebahn" with teleutosporic stage on *Carex acuta* and *C. stricta,* except for Tomsk, was reported only from Northwestern Russia. *Septoria ribis* Desm. was destructive in Kursk, Smolensk and Tchernigov governments.

Red Currant. Sphaerotheca mors-uvae B. & C. was reported only from Tver, Northeast of Moscow. Anthracnose, *Gloeosporium ribis* Mont. & Desm. was rather rare, being injurious in Lifland, Smolensk and Kursk governments, in the last the plants having lost half of their leaves in July.

Strawberry. Sphaerella fragariae Lasch occurred widely in Northwestern and Central Russia, as well as near Tomsk in Siberia and in Transcaucasus.

Raspberry. Rust, *Phragmidium rubi-idaei* Wint. is widely distributed throughout all Russia, but was more severe in 1903 in Northwestern Russia and in Kursk government (South Central Russia). In the latter region two leaf spot diseases were also reported, viz., *Septoria rubi* West, and *Phyllosticta fuscozonata* Thüm.

Service berry (*Sorbus aucuparia*). The aecidial stage of *Gymnosporangium juniperinum* Wint., whose teleutospore stage occurs on *Juniperus communis* is often very destructive. It occurred in 1903 in the Central and Northwestern governments.

VI. GRAPE.

Mildew (*Plasmopara viticola* Berl. & DeToni), occurs, according to the author, extensively in all vine growing regions of Russia and only assiduous treatment can save the vineyards from destruction. It was especially abundant in Southwestern Russia, from Kherson government westward, even the isolated vineyards being attacked, mostly for the first time, in 1903. In Caucasus and Crimea the disease caused immense injury. *Uncinula spiralis* B. & C., as widely distributed, almost, as the foregoing is far from being destructive. It was especially serious in Transcaucasus and Crimea. White rot, *Coniothyrium diplodiella* Sacc., was abundant in districts in Caucasus. Anthracnose, *Gloeosporium ampelophagum* Sacc., was abundant in Fergana Province, Turkestan, in the North of Crimea and in those vineyards especially in Caucasus that were cultivated in the Georgian manner. *Cercospora fuckelii* Sacc. occurred in Samarkand Province, Turkestan and in Kherson government, Southern Russia, where it occasioned considerable injury. *Phyllosticta vitis* Sacc. occurred at Simferopol in Crimea. It was not very destructive. It differs from black-rot in this as well as in the character of the leaf-spots produced. *Fusarium zavianum* Sacc., known hitherto only from Italy was found in 1903 in Erivan government, Transcaucasus. Sooty mould, *Capnodium salicinum* Mont., was reported from Elisabetpol government, Transcaucasus. *Dematophora necatrix* R. Hart, was abundant along the Southern coast of Crimea; the following varieties being most resistant to the disease: Verdelho de Madeira, Sersial de Madeira, Pedro Ximenes, Cabernet Sauvignon, Mourvéde, Carignagne, Kokours, Tchaush, Abbourla, and Saperavi.

VII. FOREST TREES.

Pine. The one to four year old trees, especially, are often affected with falling of the leaves, due to the fungus *Lophodermium pinastri* Chev. The disease is essentially only a trouble of the nursery trees. It was most severe in the central part of Russia. One of the most dangerous fungi to the pine forests is *Polyporus annosus* Fr. as its spreads not only by means of its spores but also through the ground. In Russia it has been found as yet only in Lomzhin and Mogiley governments. *Caeoma pinitorquum* A. Br., the aecidial stage of *Melampsora pini-torquum,* attacks the young trees and one year shoots of older trees, in many parts of Northern Russia. In 1903 it was also found in Kharkov government, in South Central Russia. Little injury results from the attacks of *Coleosporium senecionis* W. on the leaves. It was found in Smolensk and Tula governments. Causing more serious injury is *Peridermium pini* forma *corticola* Lev. which was reported in 1903 from Tobolosk government in Siberia. In seed beds in Perm government the seedlings just emerging from the ground were destroyed by *Fusarium pini* R. Hart., found in 1903 for the first time in Russia.

Larch. In Smolensk government the larch was attacked by *Caeoma laricis* W., the aecidial stage of *Melampsora betulae* on birch and *M. tremulae* on aspen.

Birch. Melampsora betulina Wint. is very widely distributed in Russia, in 1903 being especially abundant in Smolensk and St. Petersburg governments; as well as in Tomsk and Tobolsk governments in Siberia. *Polyporus betulinae* Fr. is abundant, sometimes attacking fifty per cent of the trees in the forest. In 1903 it was reported from the Northwestern governments of Russia as well as from Askold Island, near Vladivostok.

Oak. Injury by *Daedalia quercina* Pers. was reported from points in Caucasus and in Kovno government, while *Hirneola cochleata* Fr. was said to be injurious on Askold Island near Vladivostok. In Kherson government, bordering on the Black Sea, seedlings were covered by the saprophytic slime mould *Spumaria alba* DC. which caused some injury.

Elm. In Simbirsk government and along the coast of the Black Sea in Caucasus the elm was attacked by *Dothidiella ulmi* Win.

Linden. *Cercospora microsora* Sacc. was abundant in Simbirsk and Smolensk governments.

Willow. *Melampsora salicis* is widely distributed in Russia being reported from the Northwestern and North Central governments.

Ash. In the Caucasus, in two districts, the ash was reported affected by *Phyllactinia suffulta* Sacc.

Box. In Caucasus the foliage of the box was affected by *Puccinia buxi* DC. and by a lichen *Pilocarpon leucoblepharum* Wainio, the latter doing serious injury.

VIII. GARDEN AND ORNAMENTAL PLANTS.

Sooty mould occurred on house and greenhouse plants in various parts of Russia.

Haw, (*Crataegus oxyacantha*). Two species of *Gymnosporangium* attack this tree, viz., *G. confusum* Plow., with teleutsporic stage on *Juniperus sabina* L., and *G. clavariaeforme* Wint. with teleutospores on *J. communis.* The first is abundant in Southern Russia, also being reported from Tiflis in Caucasus; the latter in Central Russia.

Rose. *Phragmidium subcorticium* Wint. is found on the wild and cultivated rose very abundantly. In 1903 it was reported principally from the Northwestern governments, also from Korsk government. *Sphaerotheca pannosa* Lev. was found in the Central and also St. Petersburg governments. *Coniothyrium fuckelli* Sacc. causing the death of the stems was reported from Simbirsk government.

Iris. Rust, *Puccinia iridis* Wint., was reported on various species of *Iris* from Tiflis in Caucasus. *Heterosporium gracile* Sacc. was observed in Kursk government.

Pansy. The smut *Urocystis kmetiana* Magn., which develops its spores in the flower buds, was found in the vicinity of Moscow. It had hitherto been unknown outside of Hungary.

Lilac. In Ekaterinoslav and Kiev. governments lilacs were affected with leaf spots due to *Gloeosporium syringae* Allescher.

Hollyhocks were affected with *Puccinia malvacearum* Mont. in Kursk government, but not to any serious extent.

Peony. *Cronartium asclepiadeum* Fr. was reported from Smolensk government, while in Kursk government *Septoria macrospora* Sacc. was quite abundant.

Philadelphus coronaria was affetced by *Ascochyta philadelphi* Sacc. in Kursk government.

IX. TROPICAL AND SUBTROPICAL PLANTS.

Rice. The disease, known in Italy as Brusone, and ascribed to *Piricularia oryzae* Br. & Cav. occurred near Tiflis and Batum in Caucasus, causing much inquiry.

Cotton. In 1902 at the experiment station at Tashkent, in Turkestan, about sixty per cent. of the cotton was destroyed by *Neocosmospora vasinfecta* E. F. Smith, the native sorts alone being attacked, the American sorts remaining immune. In 1903 the disease did not reappear. A bacterial gummosis of the base of the stems proved quite injurious, however, to three varieties of native cotton. Anthracnose, *Colletotrichum gossypii* Southw., was found in 1902 and 1903 in Caucasus, as was the areolete leaf spot, *Ramularia areola* Atks., for the first time in 1903.

Sesame. In 1902 a wilt disease of sesame was found at the Golodnaya Steppe experiment station in Turkestan. It was caused by the fungus *Neocosmospora vasinfecta* var. *sesami* Jacz. The reviewer collected this at the same place in September of that year. In Transcaucasus a species of *Ascochyta* caused injurious leaf spots.

Peanut. In various spots in Transcaucasus the peanut suffered with the attacks of two different rusts, viz., *Puccinia arachidis* Speg. and *Uromyces arachidis* P. Henn.

Ramie. Metasphaeria boehmeriana Sacc. on the stems, and *Cercospora boehmeriana* Peck on the leaves were abundant at several points in the Caucasus.

Tea. The tea plantations at points along the coast of the Black Sea in the vicinity of Batum suffered severe injury some years from *Pestalozzia guepini* Desm. In 1903, however, the injury was slight. The same disease affected Camellia, Magnolia, Rhododendron, Lemon and Almond.

Citrus spp. The disease known elsewhere as Mal di Gomma, due to *Fusarium limoni* Br., occasioned serious injury in Caucasus near the Black Sea. Sooty mould, *Meliola penzizi* Sacc. was also abundant, also attacking *Camellia.*

Olive. As a result of the attacks of *Cycloconium oleaginum* Cast., affecting the foliage, the yield of olives at some points in Caucasus along the Black Sea was reduced one-half. In the same region sooty mould, *Antennaria elaeophila* Mont., was abundant. The anthracnose due to *Gloeosporium olivarum* Almeida became a serious pest at one point in the same region. It had never been destructive in Caucasus before, although very destructive in Portugal.

Fig. The only disease of the fig noted in 1903 was rust, *Uredo fici* Cast. This was abundant near Batum, but further North along the coast was not found.

Kaki. Up to 1903 the only disease of the Japanese Persimmon that had been observed in Caucasus was *Cercospora kaki* E. & E. near Batum. In that year, however, the fruits were attacked when half grown, and caused to fall, by *Botrytis diospyri* Brizi.

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